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Amphibians and Reptiles
From the Yucatan Peninsula, México

BY

WILLIAM E. DUELLMAN

UNIVERSITY OF KANSAS
LAWRENCE
1965

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From the Yucatan Peninsula, México

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INTRODUCTION

The Yucatan Peninsula (Península de Yucatán) is a northeastern projection of Middle America lying between the Gulf of Mexico and the Caribbean Sea. Included in its area of 143,500 square kilometers are the Mexican states of Campeche and Yucatán, and the territory of Quintana Roo, plus large parts of British Honduras and the Department of El Petén in Guatemala. The peninsula has a mean breadth of about 320 kilometers and a coast line of about 1100 kilometers. The coast on the north and west is low, sandy, and semibarren. The eastern coast consists of playas and bluffs, indented with bays and bordered by several islands, the largest being Isla de Cozumel. The peninsula is almost wholly composed of porous limestone, locally coralline, forming a low tableland, which gradually rises to the south. The rock is covered by a thin layer of soil in the north and deeper soils in the south. One of the features of the karst topography in the northern part of the peninsula is the presence of many natural sinks (locally called *cenotes*); similar depressions containing water in the southern part of the peninsula are

called *aguadas*. Except in the extreme southern part of the peninsula, surface streams are absent. The climate is hot with seasonal rainfall, varying from about 450 mm. annually in the northwestern part to more than 2000 mm. annually in the south. A prolonged dry season lasts from November to May. Deeper soils and more rainfall in the southern part of the peninsula provide adequate conditions for the development of a lush evergreen forest, characterized by dense undergrowth beneath trees, some attaining heights of more than 30 meters. The tall evergreen forest in the southern part of the peninsula does not meet the phyto-sociological requirements of true rainforest and is best referred to as quasi-rainforest. Northward in the peninsula the vegetation becomes lower, more xeric, and deciduous. Along the northern coast the trees seldom attain heights of more than eight meters, but tall evergreen forest extends northward into northern Quintana Roo on the eastern edge of the peninsula, where soils are deep. Possibly because of local edaphic conditions, savannas or "islands of grassland" occur in the southwestern part of the peninsula; small clumps of large evergreen trees surround many of the larger cenotes in the northern part of the peninsula, which is dominated by low, deciduous scrub forest.

This extensive and interesting peninsula has received only cursory attention from zoologists, most of whom have been associated with archeological expeditions working at such Mayan ruins as Chichén-Itzá, Tulum, and Uxmal in the state of Yucatán. A notable exception is the extensive survey of the peninsular avifauna undertaken by Paynter (1955).

Gaige (1936) reported on amphibians and reptiles from Yucatán and Campeche and summarized the earlier literature on the herpetology of the peninsula. Schmidt and Andrews (1936) reported on snakes collected by Andrews at Chichén-Itzá in the summer of 1934, and Andrews (1937) reported on additional snakes that he obtained in Yucatán and Quintana Roo in July and August, 1937. Smith (1938) reported on a collection made in southwestern Campeche and in Yucatán by him and H. Devlin Thomas in the summer of 1936. For more than 20 years no collections of amphibians and reptiles were made in the peninsula, except for a small, but significant, collection from Felipe Carrillo Puerto, Quintana Roo, reported by Peters (1953). Maslin (1963) reported on the lizards and frogs obtained in Yucatán and northern Quintana Roo in the summer of 1959 by a field party from the University of Colorado Museum, and McCoy (1963) recorded *Eumeces sumichrasti* from the northeastern part of the peninsula.

In the summer of 1962 the Museum of Natural History at the University of Kansas initiated a field program to survey the vertebrate fauna of the Yucatan Peninsula. The field work continued until early June, 1963. One field party in the summer of 1962 consisted of the author and six students (the summer field course in vertebrate zoology). The other field party, which most of the time worked jointly with the first party, consisted of J. Knox Jones, Jr. and four students, who were specifically working on a survey of Middle American terrestrial vertebrates and their ectoparasites. In the rainy season of 1962 we travelled extensively in the peninsula and obtained large and varied collections of vertebrates. In mid-December, 1962, Percy L. Clifton, field collector for the Museum of Natural History, began work in the peninsula; Clifton spent the dry season of 1962-63 working in areas that had not been studied in the previous rainy season. The field work was designed to cover as

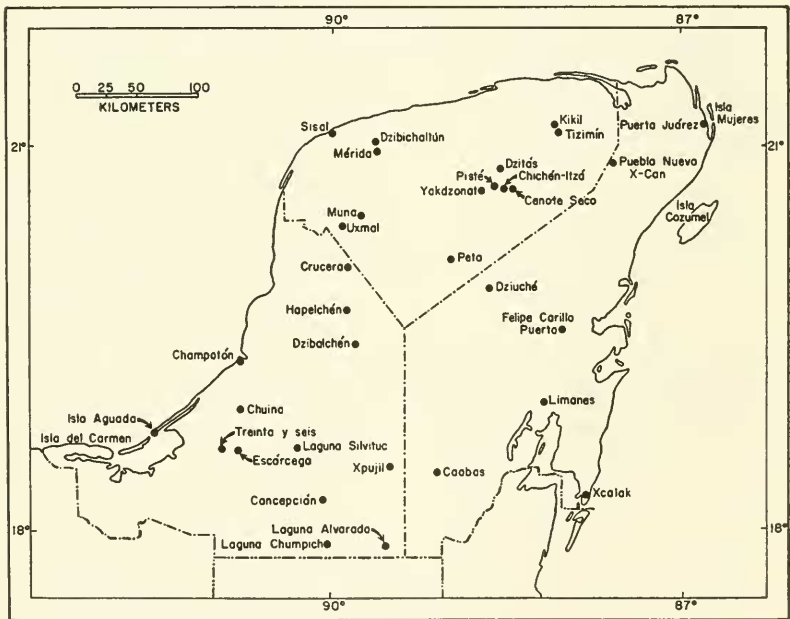


FIG. 1. Map of the Yucatan Peninsula showing localities where specimens were collected.

much of the peninsula as possible and to sample the faunas in the tall evergreen forests in the southern part of the peninsula, as well as the scrub forests and intermediate habitats to the north.

With the exception of a synoptic collection presented to the De-

partamento de la Fauna Silvestre, Dirección General de Caza, México, D. F., all of the specimens obtained are in the collections of the museum of Natural History at the University of Kansas, to which collection catalogue numbers given in the text refer.

The purpose of the present paper is to put on record the specimens of amphibians and reptiles obtained in the Yucatan Peninsula and to comment, as necessary, on taxonomic, distributional, and ecological aspects of the specimens and data. No attempt is made here to analyze the faunistics of the amphibians and reptiles of the peninsula, for an analysis of the herpetofauna of the entire lowland region comprising the Yucatan Peninsula and El Petén, Guatemala, is in preparation by L. C. Stuart and the author.

Acknowledgments

My first debt of gratitude is to the members of the field parties who obtained much of the material (specimens and detailed field notes) reported herein; thus, I thank Ticul Alvarez, A. Binion Amerson, Richard C. Fox, J. Knox Jones, Jr., Erwin E. Klaas, Linda T. Klaas, Thomas E. Lovejoy, III, Jack G. Makepeace, Dwight R. Platt, William C. Stanley, Jerome B. Tulecke, and John Wellman. I am grateful to Percy L. Clifton for his determination in seeking out certain species that I requested him to find. The field parties benefited from arrangements made for us by Eduardo C. Welling of Mérida, and our field work was enhanced by quarters provided at the Campo Experimental Forestal "El Tormento" at Escárcega, Campeche, by Ing. Hector Flores S., at Pueblo Nuevo X-Can, Quintana Roo, by Pablo Alimilla, at Felipe Carrillo Puerto, Quintana Roo, by Fernando Esquivel Montoño, and at Pisté, Yucatán, by Luis V. Polanco. For helpful suggestions we also are indebted to Padre Joseph Early of Felipe Carrillo Puerto. Last, but not least, a host of Mayans, young and old alike, helped in innumerable ways, especially as guides and collectors; their enthusiastic efforts greatly enriched our collections.

The summer field course in vertebrate zoology was supported in part by the Museum of Natural History and by a grant from the National Science Foundation (G 20939, Special Projects in Science Education); the field party working on terrestrial vertebrates and their ectoparasites was supported by the United States Army Medical Research and Development Command (Contract No. DA 49 193 MD 2215). Only through the combined resources and support of these institutions was the field work made possible. The late Ing. Luis Macías Arellano of the Departamento de la Fauna Silvestre, Dirección General de Caza, México, D. F., generously provided the necessary permits.

I am grateful to J. Knox Jones, Jr. and Erwin E. Klaas for reading parts of this paper and offering helpful comments, and I am indebted to L. C. Stuart of the University of Michigan for his helpful criticism of the manuscript.

SUMMARY OF FIELD WORK

In the summer of 1962 a combined field party consisting of J. Knox Jones, ten students, and the author made collections of terrestrial vertebrates and their ectoparasites in the Yucatan Peninsula. Our field work centered in southwestern Campeche from July 6 to 18; there we worked out of camps on

Isla del Carmen, at 5 kilometers south of Champotón, and at 7.5 kilometers west of Escárcega. On July 20 we moved to Pisté, Yucatán, and from a base camp there collected at Chichén-Itzá, north to Dzitás, and west to Yokdzonot. From July 27 to 30 we were at Pueblo Nuevo X-Can, Quintana Roo, and on July 31 we moved to a campsite 4 kilometers west-southwest of Puerto Juárez, Quintana Roo. Some of us travelled by boat to Isla Mujeres on August 1 and returned to Puerto Juárez on August 3. The following day the entire field party drove to Mérida, and on August 7 some of us flew to Isla de Cozumel, where we stayed until August 11; other members of the field party spent August 7-11 at Sisal, Yucatán. On August 13 we drove from Mérida to Felipe Carillo Puerto and set up camp 4 kilometers north-northeast of the town. We returned to Mérida on August 17; some of us spent the following day at Sisal. We left Mérida on August 20, collected briefly at Uxmal, and drove to the United States.

Percy L. Clifton arrived in Escárcega, Campeche, on December 16, 1962. From there he worked eastward across the southern part of the peninsula until April 15, 1963. He collected vertebrates at Escárcega, Treinta y seis, Chuina, Laguna Silvituc, Laguna Chumpieh, Laguna Alvarado, Concepción, and Xpujil, Campeche, and at Caobas, Xcalak, and Limones, Quintana Roo. From April 16 to May 1 he collected in Yucatán and obtained specimens at Peto, Mérida, Kikil, and Tizimín. After travelling elsewhere in México throughout most of May, Clifton returned to Campeche on May 30 to spend a week at Dzibachén, three days at Isla Aguada, and two days on Isla del Carmen.

Erwin E. Klaas and Linda T. Klaas arrived in Yucatán on July 25, 1963, and spent a week collecting amphibians and reptiles at Muna, Mérida, and Dzibichaltún.

Gazetteer

The localities where the herpetological specimens reported herein were obtained are listed alphabetically within the states below; each locality is shown on the accompanying map (Fig. 1).

Campeche

Champotón.—Lat. 19° 21' N, Long. 90° 43' W, sea level. A town on the Gulf of Mexico. We collected principally in the vicinity of our camp 5 kilometers south of the town in mixed scrub forest and quasi-rainforest.

Chuina.—Lat. 18° 58' N, Long. 90° 41' W, Elev. 25 m. A village about 45 kilometers south of Champotón. Savanna and open forest; three large, permanent aguadas.

Concepción.—Lat. 18° 13' N, Long. 90° 04' W, Elev. 65 m. A small village in dense quasi-rainforest in southeastern Campeche.

Crucero.—Lat. 20° 01' N, Long. 89° 45' W, Elev. 70 m. A small village on the road north of Hopelchén. Dense scrub forest.

Dzibachén.—Lat. 19° 24' N, Long. 89° 45' W, Elev. 100 m. A village in low scrub forest amidst rolling rocky hills.

Escárcega.—Lat. 18° 37' N, Long. 90° 44' W, Elev. 65 m. A town in southwestern Campeche. Field work was carried out in the vicinity of an agricultural station, 7.5 kilometers west of the town. Quasi-rainforest.

Hopelchén.—Lat. 19° 45' N, Long. 89° 51' W, Elev. 80 m. Village in dense scrub forest. Specimens were obtained 8 kilometers north and 11 kilometers west of the town.

Isla Aguada.—Lat. 18° 48' N, Long. 91° 31' W, sea level. A village on a sandy point projecting southwestward from the mainland towards Isla del Carmen. Sandy soil, beach, coconut plantations, and some mangrove swamp.

Isla del Carmen.—Lat. 18° 43' N, Long. 91° 41' W, sea level to 2 meters. An island in the mouth of Laguna de Términos. Coconut plantations and mangrove swamp. Most of our specimens came from the vicinity of our camp one kilometer southwest of Puerto Real, which is on the northeastern end of the island.

Laguna Alvarado.—Lat. 17° 51' N, Long. 89° 33' W, Elev. 150 m. A lagoon in tall, dense quasi-rainforest, 55 kilometers south of Xpujil and approximately 10 kilometers north of the Guatemalan border.

Laguna Chumpitch.—Lat. 19° 24' N, Long. 90° 03' W, Elev. 150 m. A lagoon about 1 kilometer in length surrounded by tall quasi-rainforest.

Laguna Silvituc.—Lat. 18° 40' N, Long. 90° 15' W, Elev. 60 m. Lake in the midst of quasi-rainforest. Collections were made at the village of Silvituc on the north edge of the lake and at a camp about 10 kilometers east of the lake.

Treinta y seis.—Lat. 18° 48' N, Long. 91° 31' W, Elev. 65 m. A small village at the edge of an aquada in quasi-rainforest, 13 kilometers west and one kilometer north of Escárcega.

Xpujil.—Lat. 18° 31' N, Long. 89° 29' W, Elev. 250 m. A village on the road from Escárcega to Chetumal; collections were made at the village, at a sawmill 9 kilometers north of the village, and at an aguada 20 kilometers north of the village. Quasi-rainforest.

Quintana Roo

Caobas.—Lat. 18° 27' N, Long. 89° 06' W, Elev. 175 m. A small village (Ejido) and lagoon, 3 kilometers south of the Escárcega-Chetumal road at kilometer post 88.

Dziuché.—Lat. 19° 54' N, Long. 88° 35' W, Elev. 40 m. A small village in cut-over scrub forest in northwestern Quintana Roo.

Felipe Carrillo Puerto.—Lat. 19° 35' N, Long. 88° 02' W, Elev. 30 m. A town in central Quintana Roo. We camped and collected at Rancho San Miguel, 4 kilometers north-northeast of town. Transitional evergreen forest (some trees 25 meters high) with some corozo palms; a deep aguada bordered on the north by an extensive marsh.

Isla Cozumel.—Lat. 20° 27' N, Long. 86° 26' W, sea level to 5 meters. A large island, 18 kilometers east of mainland in Caribbean Sea. Our collections were made on the northwestern part of the island from 2 to 5 kilometers north-northeast of the town of San Miguel in low dense scrub forest and coastal strand.

Isla Mujeres.—Lat. 21° 15' N, Long. 86° 48' W, sea level to 30 meters. A small, long island in the Caribbean Sea about 4 kilometers off the northeastern end of the peninsula. Our collections were made on the beach at the northern end of the island, in dense scrub forest at Rancho Pirata in the middle of the island, and in low scrub forest and paddle cactus association on a high rocky bluff on the southern end of the island.

Limones.—Lat. 18° 59' N, Long. 88° 10' W, Elev. 15 m. A small village north-northwest of the end of Bahía de Chetumal. Collections were made in quasi-rainforest north of the village.

Pueblo Nuevo X-Can.—Lat. 20° 52' N, Long. 87° 26' W, Elev. 10 m. A small village 5 kilometers east of X-Can, Yucatán, in tall quasi-rainforest (25 meters) with dense underbrush. We obtained specimens from the immediate vicinity of the town and from caves 1.5 kilometers south and 1 kilometer east, and 1.5 kilometers south and 7 kilometers east of the town.

Puerto Juárez.—Lat. 21° 10' N, Long. 86° 49' W, sea level. A small port on the Caribbean Coast with alternating white sand beach and limestone shore, bordered inland by mangroves. We obtained specimens along the beach and from our camp in dense evergreen forest 4 kilometers west-southwest of the village.

Xcalak.—Lat. 18° 16' N, Long. 87° 49' W, sea level. A village and ruins on the Caribbean Coast of the peninsula southeast of Chetumal (east of Bahía de Chetumal). Coconut plantations and mangrove swamp.

Yucatán

Cenote Seco.—Lat. 20° 41' N, Long. 88° 23' W, Elev. 10 m. A sink-hole 2 kilometers east of Chichén-Itzá. Growing in the sink-hole are many plants characteristic of the wet parts of the peninsula farther south, including elephant ears, mamey, and figs. Low, xeric scrub forest surrounds the cenote.

Chichén-Itzá.—Lat. 20° 41' N, Long. 88° 25' W, Elev. 10 m. A small village and extensive Mayan ruins in dense scrub forest. We collected at Cenote Xtolok at the south edge of the village and at small solution pits in the scrub forest 9 and 12 kilometers east of the village.

Dzibichaltún.—Lat. 21° 02' N, Long. 89° 34' W, Elev. 5 m. Collections were made in open, low scrub forest just west of the ruins of Dzibichaltún.

Dzitás.—Lat. 20° 50' N, Long. 88° 26' W, Elev. 10 m. A village in dense scrub forest 18 kilometers by road north-northeast of Pisté.

Kikil.—Lat. 21° 12' N, Long. 88° 09' W, Elev. 8 m. A ranch 6 kilometers north of Tizimín; cultivated fields and scrub forest.

Mérida.—Lat. 20° 58' N, Long. 89° 35' W, Elev. 10 m. Capital of the state of Yucatán. Our specimens came from just west of the airport, 6 kilometers south of town in open fields and scrub forest.

Muna.—Lat. 20° 29' N, Long. 89° 42' W, Elev. 20 m. Collections were made in dense scrub forest 7 kilometers north of the town.

Peto.—Lat. 20° 07' N, Long. 88° 57' W, Elev. 30 m. A town in south-central Yucatán; dense scrub forest and cultivated fields.

Pisté.—Lat. 20° 42' N, Long. 88° 28' W, Elev. 10 m. A village in dense scrub forest. We collected north and west of the village. Many specimens were purchased from residents.

Sisal.—Lat. 21° 10' N, Long. 90° 00' W, sea level. A small village on the northwestern coast of the peninsula. We collected in the cactus-sea grape association behind the beach at 3 and at 13 kilometers west-southwest of the village.

Tizimín.—Lat. 21° 09' N, Long. 88° 08' W, Elev. 8 m. A town in north-eastern Yucatán; scrub forest and cultivated fields. Specimens were obtained at 8 kilometers north of town and at 8 kilometers north and 10 kilometers west of town.

Uxmal.—Lat. 20° 22' N, Long. 89° 48' W, Elev. 70 m. Mayan ruins on the highway between Mérida and Campeche. Specimens were obtained in the clearings around the ruins, which are situated in dense scrub forest.

Yokdzonot.—Lat. 20° 41' N, Long. 88° 41' W, Elev. 10 m. Town in dense scrub forest 10 kilometers west of Pisté. Collections were made at 3.5 kilometers east of town.

ANNOTATED LIST OF SPECIES

In the following accounts of the 96 species and subspecies (represented by 1774 specimens) that were collected in the Yucatan Peninsula by members of the two field parties from the University of Kansas, the localities from which those specimens were obtained are listed alphabetically within their respective states; the number after each locality signifies the number of specimens obtained there. For detailed comments on each of the localities, refer to the Gazetteer.

Amphibia

CAUDATA

Bolitoglossa mexicana mexicana Duméril, Bibron and Duméril

Yucatán: Cenote Seco, 1.

One specimen (71591) is a male having a snout-vent length of 49 mm., tail length, 38 mm., 11 costal grooves, 3.5 intercostal spaces between adpressed toes, and 7-9 vomerine teeth. In life the animal was dark brownish black above with diffuse orange-tan dorsolateral stripes. The top of the head was orange-tan with black flecks. The dorsal and lateral surfaces of the tail were orange-tan with black and cream-colored flecks. The flanks were black with tan flecks, and the ventral surfaces were dull brownish black with white flecks.

The taxonomy of the *mexicana-moreleti-mulleri-odonnelli* complex in *Bolitoglossa* is unsettled. Stuart (1963:17-18) recognized *Bolitoglossa moreleti* and *B. mulleri* as separate species and placed *B. odonnelli* in the synonymy of *B. mulleri*. Wake and Brame (1963:386) considered *B. mulleri* and *B. odonnelli* to be subspecies of *B. mexicana* and placed *B. moreleti* as a synonym of *B. mexicana mexicana*. Duellman (1963:220) committed a nomenclatural error by using the combination *B. moreleti mulleri*, instead of *B. mexicana mulleri* for specimens from southern El Petén. I now follow Wake and Brame in their allocation of names and refer the present specimen to *B. mexicana mexicana*.

The salamander was found beneath a log at the edge of the cenote. This is the first specimen reported from the northern part of the Yucatan Peninsula and represents a northward range extension of about 400 kilometers from Xunantunich, British Honduras, where the species was reported by Neill and Allen (1959:20) and Tikal, Guatemala, where it was reported by Stuart (1958:16).

SALIENTIA

Rhinophrynus dorsalis Duméril and Bibron

Campeche: Dzibalchén, 1; Escárcega, 12; Laguna Alvarado, 1.

The specimens from Escárcega were found on the ground at night after a rain. The individual from Dzibalchén was removed from a mouse trap, and the specimen from Laguna Alvarado was dug out from beneath a pile of debris in the dry season. This species was reported from Champotón and Tuxpeña, Campeche, by Gaige (1936:290), from Encarnación, Campeche, by Smith (1938:10), and from Chiehén-Itzá, Yucatán, and from Xcopén, Quintana Roo, by Kellogg (1932:26). The species apparently is widespread in the peninsula and seems to avoid heavily forested areas.

Eleutherodactylus alfredi Boulenger

Quintana Roo: Pueblo Nuevo X-Can, 3.

The specimens were found in caves and are only tentatively assigned to this species, which is known to range from central Veracruz to western El Petén, Guatemala. The specimens currently are being studied in connection with a review of the *Eleutherodactylus alfredi* group by John D. Lynch at the University of Illinois.

Engystomops pustulosus Cope

Campeche: Escárcega, 1.

One individual was found beneath damp bark on the ground in December. No others were seen or heard. Apparently this species does not invade the wet forested regions of the southern part of the peninsula; it is unknown from the arid northern part of the peninsula. Smith (1938:11) reported specimens from Encarnación in southwestern Campeche.

Leptodactylus labialis (Cope)

Campeche: Chuina, 5; Escárcega, 4; Treinta y seis, 1. *Quintana Roo*: Isla Cozumel, 4.

All individuals were taken in the vicinity of water, such as a temporary pond at Escárcega, a reed-choked ditch on Isla Cozumel, and at permanent ponds at other localities. Gaige (1936:291) and Smith (1938:11) recorded the species from several localities in Campeche and Yucatán, and Maslin (1963:3) mentioned a specimen from Isla Cozumel.

Leptodactylus melanonotus (Hallowell)

Campeche: Champotón, 8; Chuina, 16; Treinta y seis, 4. *Quintana Roo*: Caobas, 1; Puerto Juárez, 2.

Like the preceding species, this frog was taken only in the vicinity of water. No breeding congregations were found. Although we did not find the species in the arid northern part of the peninsula in the state of Yucatán, Gaige (1936:291) recorded specimens from Yuncu and Pisté, Yucatán.

Bufo marinus (Linnaeus)

Campeche: Isla del Carmen, 1. *Quintana Roo*: Isla Cozumel, 1; Felipe Carrillo Puerto, 1. *Yucatán*: Chichén-Itzá, 1.

This large toad, which is common in most of the lowlands of México and Central America, was absent at most localities. Stuart (1958:7) suggested that the quasi-rainforest at Tikal precluded the presence there of *Bufo marinus*, which he intimated is an inhabitant of the scrub forest and savannas, but Duellman (1963:221) reported the species from the rainforests of southern El Petén. The present specimens all come from forested areas—quasi-rainforest at Felipe Carrillo Puerto, broad-leafed forest at the edge of a cenote at Chichén-Itzá, dense scrub forest on Isla Cozumel, and a coconut grove on Isla del Carmen.

Bufo valliceps valliceps Wiegmann

Campeche: Champotón, 14; Chuina, 7; Concepción, 1; Dzibalchén, 4; Escárcega, 30; Hopelchén, 3; Laguna Chumpich, 2; Laguna Silvituc, 13; Treinta y seis, 2. *Quintana Roo*: Caobas, 2; Felipe Carrillo Puerto, 5; Pueblo Nuevo X-Can, 15; Puerto Juárez, 3. *Yucatán*: Chichén-Itzá, 4; Pisté, 4; Yokdzonot, 1.

This toad is widespread on the peninsula, where it seems to be more abundant in the quasi-rainforest than in the scrub forest. In July, 1962, males were calling from shallow temporary ponds at Champotón and Escárcega, and large numbers of tadpoles were found in a shallow pool five kilometers south of Champotón. The dorsal ground color of the toads varies from yellowish tan to brown. No gray or reddish tan individuals like those reported from El Petén by Duellman (1963:221) were found.

Hyla loquax Gaige and Stuart

Campeche: Laguna Alvarado, 21; Laguna Silvituc, 2.

The series from Laguna Alvarado was obtained at night by Percy Clifton from rushes at the edge of open water in February; those from Laguna Silvituc were found by Clifton on plants at the edge of the water in December. In August, 1962, I heard this species calling from the midst of dense rushes at Felipe Carrillo Puerto, but no specimens were obtained. The only other records for the species from the peninsula are from Encarnación and Tres Brazos in southwestern Campeche (Smith, 1938:12).

Hyla microcephala martini Smith

Campeche: Escárcega, 15; Laguna Alvarado, 6; Xpujil, 2.

This species was breeding in a temporary pond at Escárcega on July 12, 1962, and it was heard, but individuals were not collected, at Felipe Carrillo Puerto, Quintana Roo. The other specimens were found at night on emergent vegetation in aguadas in the dry season. Barbour and Cole (1906:154) recorded the species (as *Hyla phlebodes*) from Chichén-Itzá, Yucatán.

Hyla picta (Günther)

Campeche: Escárcega, 16.

This small tree frog was breeding in a temporary pond on July 12, 1962. Although the species is known from scattered localities in El Petén, in the Yucatan Peninsula it is known only from southwestern Campeche.

Hyla staufferi Cope

Campeche: Champotón, 2; Escárcega, 11; Treinta y seis, 7. *Quintana Roo*: Isla Cozumel, 3.

Calling males were heard only on July 12, 1962, at a temporary pond at Escárcega, Campeche; others were sitting on vegetation at night. Apparently this small tree frog does not occur in the arid northern part of the peninsula, but it is widespread in the mesic parts of the peninsula.

Of the three specimens that we obtained on Isla Cozumel, two (71710-1) are recently metamorphosed young having snout-vent lengths of 10.2 and 10.3 mm., collected on August 7, 1962. The other specimen (71311) is a gravid female obtained on the same date. Maslin (1963:6) stated that the vocal sacs were unpigmented in the two males that he obtained on Isla Cozumel. In all breeding males that I have seen alive from throughout the range of the species the vocal sac is bright yellow. Perhaps Maslin's specimens were not in breeding condition, or possibly males from Isla Cozumel differ from those in other parts of the range.

Phrynohyas spilomma (Cope)

Campeche: Champotón, 5; Escárcega, 4; Laguna Silvituc, 1; Treinta y seis, 3. *Quintana Roo*: Felipe Carrillo Puerto, 1; Puerto Juárez, 2.

One male was calling from a tree in the forest at Felipe Carrillo Puerto on August 16, 1962. In the rainy season individuals were on trees at night at Champotón, Escárcega, and Puerto Juárez. In the dry season individuals were beneath the outer sheaths of banana plants at Treinta y seis. A juvenile having a snout-vent length of 32 mm. was beneath a log about 60 meters from

Laguna Silvituc in February. On the basis of the localities recorded here and those listed by Duellman (1956:35) the distribution of this species apparently encompasses the entire peninsula.

Phyllomedusa callidryas taylori Funkhouser

Campeche: Escárcega, 5.

Breeding individuals were obtained at a temporary pond at Escárcega, and males were heard, but not collected, at Felipe Carrillo Puerto, Quintana Roo. The specimen reported as *Agalychnis moreleti* from Tuxpeña, Campeche, by Gaige (1936:292) is *P. callidryas taylori*. Other records for the peninsula are from Chichén-Itzá, Yucatán (Gaige, 1936:292). Specimens from Chichén-Itzá and Culuba, Yucatán, are in the Chicago Natural History Museum. Since this species typically inhabits the wet tropical forest, I suspect that its distribution in the northern part of the peninsula is restricted to the margins of cenotes.

Smilisca baudini (Duméril and Bibron)

Campeche: Champotón, 13; Chuina, 3; Dzibalchén, 19; Escárcega, 29; Hopelchén, 3; Isla del Carmen, 20; Treinta y seis, 1. *Quintana Roo*: Felipe Carrillo Puerto, 2; Isla Cozumel, 4; Pueblo Nuevo X-Can, 2; Puerto Juárez, 10. *Yucatán*: Chichén-Itzá, 3; Mérida, 1; Yokdzonot, 3.

This large tree frog is abundant throughout the peninsula. In the rainy season the distinctive call was heard nearly every night.

Tripion petasatus (Cope)

Campeche: Champotón, 1; Dzibalchén, 14; Escárcega, 4. *Yucatán*: Chichén-Itzá, 54; Dzibichaltún, 4; Mérida, 1; Muna, 1; Pisté, 5; Yokdzonot, 43.

The many examples of this bizarre casque-headed tree frog have been reported in detail by Duellman and Klaas (1964). The specimens from Campeche are from localities intermediate between those in the dry northern part of the peninsula and those in the savannas of El Petén to the south.

Gastrophryne elegans (Boulenger)

Campeche: Xpujil, 1.

One specimen having a snout-vent length of 22.5 mm. was obtained from submerged grass roots in a marsh in February. The only other records for the species in the peninsula are from Becán and Tres Brazos in southern Campeche. This frog apparently is restricted to forested areas; it is known from southern Veracruz and southern Campeche southward to the lowlands of northern Alta Verapaz, Guatemala.

Hypopachus cuneus nigroreticulatus Taylor

Campeche: Concepción, 1; Escárcega, 38; Laguna Alvarado, 1; Laguna Chumpich, 1. *Quintana Roo*: Felipe Carrillo Puerto, 1; Puerto Juárez, 1. *Yucatán*: Dzitás, 1.

No breeding congregations were encountered; instead, these frogs were found moving about on the ground at night in the rainy season and to a lesser extent in the dry season. This fossorial frog is widespread in the peninsula; numerous localities are listed by Gaige (1936:294), who discussed the species under the name *Hypopachus inguinalis*, and by Smith (1938:2 and 12).

***Rana palmipes* Spix**

Campeche: Laguna Chumpich, 1.

The single specimen was found at night at the edge of the lake in January. The only other record for the species in the peninsula is Tres Brazos in southwestern Campeche (Smith, 1938:13).

***Rana pipiens* Schreber**

Campeche: Chuina, 2; Hopelchén, 1; Laguna Silvituc, 3. *Quintana Roo*: Caobas, 1; Felipe Carrillo Puerto, 1; Puerto Juárez, 4. *Yucatán*: Chichén-Itzá, 2.

All individuals were at the edges of cenotes or aguadas, except one in a cave at Felipe Carrillo Puerto. The records presented here and by Gaige (1936:294) and Smith (1938:13) indicate that the species is widespread in the peninsula.

Reptilia**TESTUDINES*****Caretta caretta* (Linnaeus)**

Campeche: Isla Aguada, 1. *Quintana Roo*: Isla Mujeres, 1.

One skull was picked up on the beach at Isla Aguada, and a skeleton was found on the rocky southern shore of Isla Mujeres.

***Chelonia mydas* (Linnaeus)**

Quintana Roo: Isla Cozumel, 1.

A single skull was found on the beach 3.5 kilometers north of San Miguel.

***Eretmochelys imbricata* (Linnaeus)**

Quintana Roo: Isla Mujeres, 1.

A skull was found on the beach at the northern end of Isla Mujeres.

***Kinosternon creaseri* Hartweg**

Campeche: Champotón, 1; Dzibalchén, 1. *Quintana Roo*: Pueblo Nuevo X-Can, 6. *Yucatán*: Pisté, 7.

Fifteen specimens of this distinctive species were obtained. The largest is a male having a carapace length of 121.5 mm. In all specimens the anterior lobe of the plastron is noticeably longer than the middle portion, and in all adults the length of the gular shield is more than half the length of the anterior plastral lobe. Of five juveniles having carapace lengths of 34.4 to 41.5 mm., three specimens have gular shields that are less than half the length of the anterior plastral lobe. In juveniles a middorsal keel and a pair of dorsolateral keels are evident. With increased size the gular shield becomes relatively longer, and the keels on the carapace diminish; consequently, only a middorsal keel is evident in adults. Ontogenetic differences also are apparent in the lateral notching of the upper beak. The notches are barely noticeable in juveniles and only moderately developed in small adults (carapace lengths of 80 to 100 mm.), whereas in large adults, especially males, the upper jaw is deeply notched. In coloration the present specimens are like those described

by Hartweg (1934:2), except that two individuals (70921-2) found in a solution cave have pale tan carapaces, pale creamy yellow plastrons, and pale grayish brown limbs and heads.

All specimens are from the subhumid part of the peninsula, where the aquatic habitat is restricted to cenotes. Farther south *Kinosternon creaseri* is replaced in the humid forest, where lakes and streams are present, by *K. acutum*, which has been reported from the peninsula only from Balchacaj, Campeche, under the name *Kinosternon berentianum* by Smith (1938:20).

***Kinosternon cruentatum* Duméril and Bibron**

Campeche: Dzibalchén, 3; Isla del Carmen, 1; Laguna Silvituc, 1; Xpujil, 1.
Quintana Roo: Isla Cozumel, 10. *Yucatán*: Tizimin, 1.

Stejneger (1941:458) named *Kinosternon cruentatum consors* from Isla Cozumel and diagnosed the subspecies as differing from *K. cruentatum cruentatum* by having a narrower and lower shell and the anterior lobe of the plastron averaging shorter than the middle portion. Examination of the data presented in Table 1 shows that the average width of the shell, as compared with the length, is slightly less in specimens from Isla Cozumel than in the samples from the mainland. The height of the shell and the relative lengths of the plastral lobes are not noticeably different in specimens from Isla Cozumel. No notable differences in coloration exist between the insular specimens and those from various localities on the mainland. The absence of characters to distinguish the specimens from Isla Cozumel and the northern part of the Yucatan Peninsula from individuals from the rest of the range of the species makes it necessary to place the name *Kinosternon cruentatum consors* Stejneger, 1941 (based on specimens from Isla Cozumel), as a synonym of *K. cruentatum* Duméril and Bibron, 1851.

TABLE 1.—COMPARISON OF FOUR SAMPLES OF *KINOSTERNON CRUENTATUM*
(MEANS ARE GIVEN IN PARENTHESES BELOW OBSERVED RANGES)

Area	N	Carapace width/ carapace length	Shell height/ carapace length	Anterior lobe/ middle lobe	Gular/ anterior lobe
Cozumel	10	61.1-68.5 (65.6)	40.5-45.8 (44.0)	1.00-1.18 (1.09)	52.2-63.5 (58.1)
Yucatán	1	69.9	38.9	1.09	48.9
Campeche	6	64.2-73.4 (67.9)	39.6-50.6 (44.1)	1.08-1.21 (1.15)	42.3-60.1 (50.5)
Veracruz	6	64.3-69.1 (67.2)	47.8-50.2 (49.1)	1.07-1.15 (1.12)	50.1-53.9 (52.1)

All specimens are adults; the largest is a female from Isla Cozumel having a carapace length of 127.7 mm.; the largest specimen from the mainland is a female from Dzibalchén having a carapace length of 126.4 mm. The largest male is from Dzibalchén and has a carapace length of 117.0 mm. Considerable variation is apparent in the plastral scutes. The relative length of the gular

to the length of the anterior plastral lobe is given in Table 1. In all specimens from the mainland the pectoral scutes are in contact at the midline, but in six of ten specimens from Isla Cozumel the pectorals are separated postero-medially by the humerals. One specimen from Isla Cozumel and the specimen from Isla del Carmen have the femoral scutes separated in the midline, whereas in all others these scutes are in contact. Usually the axillary and inguinal scutes are separated by the lateral part of the abdominal scute, but in one specimen from Isla Cozumel the axillary and inguinal scutes are in contact on both sides of the shell, and in one specimen from Dzibalchén the scutes are in contact on the left side only.

Some notable sexual dimorphism is noticeable in these turtles. In males the greatest height of the shell is at a point about two-thirds the length of the carapace, from which point the carapace slopes abruptly downward; a slight depression is present anteromesially in the posterior lobe of the plastron. In females the highest point of the shell is about at mid-length, and there is no depression in the plastron. In males the throat is marked with dense brown reticulations tending to enclose small cream-colored spots. The throat in females is a dusty cream-color with a median dark grayish brown streak. The lower beak on males is predominantly brown; that in females is predominantly cream colored.

All specimens came from aquatic or semi-aquatic situations. The individuals from Isla Cozumel were found buried in mud or dug in at the bases of clumps of cat-tails in a partly dried up marsh. The specimen from Tizimín was in a cenote; specimens from Campeche were in lakes or aguadas, except the shell from Isla del Carmen, which was in a coconut grove.

Kinosternon leucostomum Duméril and Bibron

Quintana Roo: Felipe Carrillo Puerto, 1.

A single male having a carapace length of 117.7 mm. was trapped in a deep aguada. The anterior lobe of the plastron has a length of 33.5 mm.; the middle lobe, 24.0 mm.; the gular scute, 15.7 mm. The only other record for the peninsula is that given by Smith (1938:21) for Becán, Campeche.

Staurotypus triporcatus (Wiegmann)

Campeche: Laguna Chumpich, 3.

Three small individuals having carapace lengths of 106, 117, and 147 mm. were obtained from a marshy lake. One of these (75118) is represented by a shell found on the shore. In the preserved specimens the top and sides of the head are black with many small, round, white spots.

Geoemyda areolata (Duméril and Bibron)

Campeche: Dzibalchén, 2; Laguna Silvituc, 1. *Quintana Roo*: Isla Cozumel, 17; Pueblo Nuevo X-Can, 2. *Yucatán*: Pisté, 3.

This terrestrial turtle seems to be abundant in the arid scrub forest in the peninsula, especially on Isla Cozumel, where 17 individuals were found on the forest floor after rains. Juveniles, of which the smallest has a carapace length of 56 mm., are colored like the adults.

Pseudemys scripta ornata (Gray)

Campeche: Laguna Chumpich, 2; Laguna Silvituc, 1. *Quintana Roo*: Felipe Carrillo Puerto, 2.

Five adults were obtained from aquatic habitats—one from a pond in a stream, one from a trap in a deep aguada, and three from marshy lakes.

Terrapene mexicana yucatanica (Boulenger)

Campeche: Dzibalchén, 3. *Yucatán*: Pisté, 4.

The following measurements are for the largest male and largest female, respectively—carapace length 135, 146; carapace width 104, 110; height of shell 68, 82 mm. All specimens have four toes and claws on each hind foot, and all have a deeply notched upper beak. Two specimens from Pisté and two from Dzibalchén have predominately yellow plastrons with brown sutures. The plastrons in the other specimens are predominately dark brown with irregular yellow areas. The carapace varies from olive-tan to predominately dark brown with yellowish tan blotches. In life a typically colored specimen from Pisté had a yellowish tan head with black flecks; the beaks were pinkish tan, and the iris was yellow. The species has been recorded from Chichén-Itzá by Barbour and Cole (1906:147), Gaige (1936:304), and Smith (1939a:17), and from Cobá, Quintana Roo, by Smith (1939a:17).

CROCODILIA

Crocodylus moreleti Duméril and Duméril

Campeche: Laguna Alvarado, 2; Laguna Silvituc, 1.

The specimen from Laguna Silvituc is a skull 217 mm. in length; one of the specimens from Laguna Alvarado is a skull 398 mm. long, and the other is a juvenile having a total length of 900 mm. The species was observed commonly at Laguna Chumpich and at Laguna Alvarado. Individuals were seen in aguadas at Treinta y seis and Xpujil. Smith (1938:21) reported specimens from Balchacaj, Becán, and Encarnación, Campeche.

SAURIA

Aristelliger georgeensis (Bocourt)

Quintana Roo: Isla Cozumel, 6; Isla Mujeres, 12.

On Isla Mujeres these geckos were observed on coconut palms and on houses at night. Males often were located by their voice, which consists of a low "chirp." The lizards are extremely wary; often only the beam from a flashlight would cause them to scurry up the trunk into the bases of the fronds. Captured individuals strenuously twisted their bodies, readily dropped their tails, and bit viciously. On Isla Cozumel most specimens were taken on palm trunks or houses, and one was caught in a snap trap set in the fork of a tree about one and one-half meters above the ground in dense scrub forest.

The largest female has a snout-vent length of 97.9 mm.; the largest male, 96.3 mm. In life adults are pale greenish gray with rusty brown reticulations. In preservative they are grayish brown with brown reticulations. A juvenile

(70037) having a snout-vent length of 26.4 mm. has the top of the head pale tan; this color extends to the base of the tail in the form of a broad middorsal stripe with irregular edges. The side of the head, flanks, and limbs are dark brown with white flecks. The tail is brown with four creamy tan rectangular blotches on the proximal third. The distal one-sixth of the tail is white (yellow in life).

Previously this species has been reported in México from Isla Cozumel; Maslin (1963:8) commented on specimens obtained there in 1959, and Peters (1953:231) recorded the species from Felipe Carrillo Puerto on the mainland.

Coleonyx elegans elegans Gray

Campeche: Escárcega, 1; Laguna Chumpich, 1; Xpujil, 5. *Quintana Roo*: Caobas, 1; Felipe Carrillo Puerto, 1; Pueblo Nuevo X-Can, 3; Puerto Juárez, 2. *Yucatán*: Chichén-Itzá, 1; Kikil, 3; Mérida, 1; Pisté, 5.

This nocturnal lizard seems to be abundant throughout the peninsula. Many specimens were observed on roads at night, at which time they are readily identified by their habit of arching the tail as they walk. Several were caught in mouse traps.

The largest specimen is a male having a snout-vent length of 92.5 mm. and a tail length of 78.8 mm. Noticeable ontogenetic change in coloration takes place. In juveniles (less than 40 mm. in snout-vent length) the dark bands on the dorsum are only slightly darker than the interspaces; the dark bands on the trunk are narrowly bordered by black, and the caudal bands are solid black. Individuals having snout-vent lengths of 50 to 60 mm. have distinct dark dorsal bands broadly bordered by black, and the median parts of the caudal bands are brown. In large individuals the dorsal bands usually are dark brown to black with pale brown centers; the interspaces are pale creamy tan. One specimen from six kilometers south of Mérida is distinctive in having a linear pattern consisting of a broad middorsal tan stripe bordered on each side by a narrower brown stripe, which is continuous with the postorbital stripe. The flanks are tan and marked with dark brown dashes and circles. This pattern resembles that mentioned for certain specimens from the Yucatan Peninsula by Klauber (1945:194).

Females collected on August 15, 1962, and on April 9, 1963, each contained two eggs. Klauber (1945:195) listed several localities for this species from the peninsula and a record for Isla Mujeres.

Sphaerodactylus glaucus glaucus Cope

Campeche: Chuina, 1. *Quintana Roo*: Puerto Juárez, 1.

A specimen from Chuina was found beneath debris on the savanna. It is typical of this subspecies; in life it was grayish brown above with a black nape spot. The belly was yellow; the underside of the tail was orange-red, and the eye was orange.

The specimen from Puerto Juárez (70057) was found in one of our tents. This specimen has a snout-vent length of 20.3 mm. and a tail length of 16.7 mm. In general appearance the color pattern is suggestive of *S. torquatus* Strauch, for a distinctive double black collar is present on the neck. A double black ring is present on the base of the tail, which was red in life. White spots are present on the elbows and knees; in this respect the coloration is like that of *S. glaucus glaucus*. The color pattern of this specimen combines pattern characters of *S. glaucus* and *S. torquatus*. Since the latter is known to

occur only on the Pacific slopes of the Isthmus of Tehuantepec, the possibility that the present specimen is a hybrid is highly unlikely. The specimen probably was not introduced from the West Indies, for I know of no species of *Sphaerodactylus* in the West Indies that has smooth, imbricate, dorsal scales and a color pattern like that described above. The various studies on the systematics and distribution of Middle American *Sphaerodactylus*, such as those by Taylor (1947), Smith and MacDougall (1954), and Smith and Alvarez del Toro (1962), strongly point out the need for a thorough review of these lizards. Consequently, I refrain from drawing any conclusions concerning the specimen from Puerto Juárez.

Two individuals resembling the specimen from Puerto Juárez were observed in the litter on the forest floor at Pueblo Nuevo X-Can, Quintana Roo. Gaige (1936:295) recorded *S. glaucus* from Tuxpeña, and Smith (1938:13) reported the species from Apazote, Balchacaj, and Encarnación, Campeche.

Thecadactylus rapicaudus (Houttuyn)

Quintana Roo: Pueblo Nuevo X-Can, 2. *Yucatán*: Cenote Seco, 1; Kikil, 3; Pisté, 1.

Specimens were obtained from crevices in walls of cenotes, in caves, and on tree trunks covered with loose bark. Some kind of close fitting cover is characteristic of the places where these lizards live. They are quick to take refuge beneath bark or in crevices; none was observed on the ground.

Anolis humilis uniformis Cope

Campeche: Laguna Alvarado, 2; Laguna Chumpich, 1.

Previously this lizard has not been definitely recorded from the peninsula. The present specimens were obtained by Clifton in quasi-rainforest in extreme southern Campeche.

Anolis lemurinus bourgeaei Bocourt

Campeche: Chuina, 4; Escárcega, 1; Laguna Alvarado, 1; Laguna Chumpich, 1. *Quintana Roo*: Felipe Carrillo Puerto, 1; Pueblo Nuevo X-Can, 4. *Yucatán*: Cenote Seco, 4; Chichén-Itzá, 1.

This anole was most frequently observed on trunks of large trees, where the lizards usually were less than two meters above the ground. One was on a log at Laguna Chumpich, and another was on the ground at the edge of a cenote at Pueblo Nuevo X-Can. At Cenote Seco and Chichén-Itzá the species was in islands of mesic forest around cenotes in the otherwise low xerophilous forest. The color of the dewlap in males varies from deep orange to scarlet.

Anolis limifrons rodriguezi Bocourt

Campeche: Champotón, 5; Chuina, 12; Dzibalchén, 7; Escárcega, 1; Isla del Carmen, 23; Treinta y seis, 1. *Quintana Roo*: Caobas, 1; Isla Cozumel, 11; Isla Mujeres, 1; Limones, 1; Pueblo Nuevo X-Can, 5. *Yucatán*: Pisté, 5.

This ubiquitous little anole is widespread in the drier parts of the peninsula, where by day individuals were found on bushes and branches of low trees and at night on bushes and tall grass.

Little variation was noted; all specimens have the characteristic pale transverse bands on the shanks; the dewlap in living males is pale yellowish orange.

Anolis sagrei sagrei Duméril and Bibron

Quintana Roo: Isla Mujeres, 15; Xcalak, 5.

The present specimens were studied with respect to the characters used by Duellman and Schwartz (1958:281). All specimens have the supraorbital semicircle series separated by one row of scales, the caudal crest well developed, and moderate-sized granular lateral scales. Males have an orange dewlap and dark gray throat. In life active males were dark brown with cream-colored flecks dorsally; some individuals changed to olive-tan with creamy-white lateral stripes. In all aspects of coloration and scutellation the specimens from Quintana Roo are like those from Cuba. I agree with Stuart (1963:22) in his hesitation to accept as valid the recognition of the Central American populations of this species as *Anolis sagrei mayensis*, as proposed by Smith and Burger (1949:407). The possibility of independent introductions from various populations in the West Indies and the resemblance of the mainland specimens to those from Cuba clearly indicate that the recognition of a separate subspecies in Central America is undesirable. Fugler (personal communication) reached the same conclusion after studying specimens from British Honduras, although Neill and Allen (1959:34 and 1962:80) refer specimens from British Honduras to *Anolis sagrei mayensis*.

We obtained specimens from fences and trunks of coconut palms by day on Isla Mujeres. Two individuals were sleeping on palm fronds at night. Smith (1938:3) reported the species from Progreso, Mérida, and Chichén-Itzá in Yucatán, and from Balchacaj, Ciudad del Carmen, and Panlao in Campeche.

Anolis sericeus ustus Cope

Campeche: Champotón, 6; Chuina, 4; Dzibachén, 6; Isla del Carmen, 1; Laguna Alvarado, 1; Laguna Silvituc, 1. Quintana Roo: Isla Mujeres, 2; Pueblo Nuevo X-Can, 1. Yucatán: Yokdzonot, 1.

The small anoles inhabiting the Atlantic lowlands of northern Middle America and having large, keeled ventral scales and a yellowish orange dewlap with a central blue spot have been recognized as three distinct species—*A. sericeus*, *ustus*, and *kidderi*. Stuart (1955) distinguished the species by size of dorsal scales, rugosity of supraoculars and scales in the frontal depression, and contact or separation of the occipital plate from scales in the supraorbital semicircle series. Furthermore, according to Stuart (1955:28), *Anolis ustus* has more than 60 dorsal scales (counted along midline from axilla to groin) and *A. sericeus* on the Atlantic lowlands has fewer than 60.

In the specimens that we obtained from the peninsula and adjacent islands, considerable variation obtains in all of the characters listed by Stuart. One specimen from Isla del Carmen has 64 dorsals. Eighteen specimens from the mainland of Campeche have 57-67 (average 62.4) dorsals; of these only three specimens have fewer than 60 scales. All three are from Champotón and have 57, 58, and 58 dorsals (three others from that locality have 61, 62, and 62 dorsals). The single specimen from Yucatán has 65; one from Pueblo Nuevo X-Can has 60, and two from Isla Mujeres have 68 and 70 dorsals.

The scales in the frontal depression and the supraoculars are strongly keeled in the specimens from Isla del Carmen and from Champotón, usually strongly or moderately keeled in specimens from other localities in Campeche, and nearly smooth in specimens from Yucatán and northern Quintana Roo.

In most specimens from the peninsula the supraorbital semicircles are separated by one row of scales; in all three specimens from Chuina, in one of six from Dzibachén, and in the single specimens from Laguna Silvituc and Yokdzonot and semicircles are in contact. In the specimen from Laguna Silvituc (74876) the occipital plate is in contact with the supraorbital semicircles, whereas in all other specimens the plate is separated from the semicircles by one to three rows of small scales.

Examination of a series of *Anolis sericeus* from Jesús Carranza in southern Veracruz (27230-45) shows that in this sample the head scales are strongly keeled, the supraorbital semicircle series are separated by two or three small scales, and the number of dorsal scales varies from 45 to 53 (average 48.2). Four specimens of *Anolis sericeus* from southern El Petén, Guatemala (55792-3, 59529-30), have 44 to 51 (average 47.5) dorsals. The semicircles are separated by two rows of scales in one specimen and by only one row in the other three. In all four specimens the head scales are slightly keeled.

On the basis of these data and Stuart's (1955) discussion of the variation in *Anolis sericeus*, I can see no justification for recognizing *Anolis ustus* as a species distinct from *Anolis sericeus*. A logical arrangement is the assignment of the peninsular populations to *Anolis sericeus ustus*. The validity of *Anolis kidderi* is questionable, for the variation in the head scales in this group of anoles is of sufficient magnitude that the contact or separation of the occipital plate and supraoculars might be within the range of intraspecific variation. Also, the rugosity of the head shields is variable. In the specimen from Laguna Silvituc the head scales are nearly smooth, but Smith (1938:14) reported a specimen of *A. kidderi* from Campeche having keeled head scales. Until a thorough study of the available specimens of this group of anoles is completed, I am considering the specimen from Laguna Silvituc (74876) to be *Anolis sericeus ustus*, not *Anolis kidderi*.

Individuals of *Anolis sericeus ustus* were found on bushes and branches of low trees by day and sleeping on bushes and tall grass at night. Detailed field studies are needed to determine the ecological relationships between this species and *Anolis limifrons rodriguezi*. In southwestern Campeche both species are found in the same habitat.

Anolis tropidonotus tropidonotus Peters

Quintana Roo: Limones, 1.

The single specimen was found in leaf litter in dense evergreen forest. Previous records for the peninsula are Chichén-Itzá (Barbour and Cole, 1906: 149, as *Norops yucatanicus*), and Encarnación and Becán, Campeche (Smith, 1938:14).

Basiliscus vittatus Wiegmann

Campeche: Champotón, 14; Chuina, 3; Dzibachén, 4; Escárcega, 3; Laguna Alvarado, 1; Laguna Chumpich, 4; Laguna Silvituc, 4. *Quintana Roo*: Felipe Carrillo Puerto, 4; Isla Cozumel, 5; Pueblo Nuevo X-Can, 7; Puerto Juárez, 1. *Yucatán*: Kikil, 7; Pisté, 11.

Usually this lizard is found in the vicinity of ponds and streams, but throughout the xeric western coastal region and northern parts of the peninsula, where such aquatic habitats are lacking, individuals were found in dense scrub forest. Except for three specimens from Escárcega, the species is absent in our col-

lections from the southern part of the peninsula, but Smith (1938:15) reported the species from Balchacaj, Encarnación, Pital, and Tres Brazos, Campeche.

***Corythophanes hernandezi* (Wiegmann)**

Quintana Roo: Pueblo Nuevo X-Can, 1.

This specimen was found on a tree trunk in the forest. The dorsal crest is broadly separated from the helmet. With the exception of the cream-colored labials and loreolabials, the side of the head is dark brown. The throat is boldly barred with dark brown.

***Ctenosaura similis* (Gray)**

Campeche: Champotón, 16; Dzibalchén, 1; Isla Aguada, 13; Isla del Carmen, 7. *Quintana Roo*: Isla Cozumel, 3; Isla Mujeres, 6; Puerto Juárez, 3; Xcalak, 2. *Yucatán*: Kikil, 2; Pisté, 23; Sisal, 1; Uxmal, 1.

This large lizard is abundant in the subhumid parts of the peninsula, especially in rocky areas. Many large adults were observed on the rocky shore of the Gulf of Mexico just north of Champotón. Likewise, the lizards are abundant on the rocky southern shore of Isla Mujeres. Juveniles were common in the coconut groves on Isla del Carmen in early July, 1962, and at Isla Aguada on June 9, 1963.

***Enyaliosaurus defensor* (Cope)**

Campeche: Dzibalchén, 1. *Yucatán*: Pisté, 2.

Two species of *Enyaliosaurus* have been recognized in the Yucatan Peninsula. The first of these is *Cachryx* (= *Enyaliosaurus*) *defensor* Cope (1866: 124) from "Yucatan." I have examined the three syntypes (U. S. National Museum 12282). The other named species is *Ctenosaura* (= *Enyaliosaurus*) *erythromelas* Boulenger (1886:241); his description was based on a living specimen of unknown provenance and illustrated in color. Barbour and Cole (1906:150) reported *E. defensor* from Chichén-Itzá (Museum of Comparative Zoology 7095) and thereby provided the first definite locality for the species. Smith (1938:15) reported *E. erythromelas* from Balchacaj, Campeche (University of Illinois 20327). Additional records from the peninsula are Mayapán (Chicago Natural History Museum 40708-15) and the specimens reported here for the first time in our collections from the peninsula.

The principal character used to distinguish *E. defensor* from *E. erythromelas* is the presence or absence of rows of small scales between the whorls of large spinous scales on the dorsal surface of the tail (Bailey, 1928:48). In their descriptions both Cope and Boulenger described the dorsum as black with a middorsal red area.

Examination of all known specimens from the Yucatan Peninsula reveals that all adults have a red middorsum that varies in color from brick red to brownish red; the scapular region is black. A living male from Pisté, Yucatán, had an orange throat, greenish gray sides of the head, tan belly, and olive-gray tail. Six of fourteen specimens from Yucatán lack small scales between the enlarged dorsal caudal whorls, whereas the two specimens from Campeche and eight specimens from Yucatán have one row of small scales present dorsally between the enlarged whorls, at least anteriorly. In these specimens the small scales border only the median and paramedian enlarged scales. All

specimens have seven spinous scales dorsally in each whorl, and the posterior edges of the spines are perpendicular to the axis of the tail, except those in the lateral row, which point slightly posteriorly.

TABLE 2.—COMPARISON OF CERTAIN CHARACTERISTICS IN THE FOUR SPECIES OF ENYALIOSAURUS

(MEANS GIVEN IN PARENTHESES BELOW THE OBSERVED RANGES)

Species and Number of Specimens	Dorsals	Femoral pores	Lamellae under 4th toe	Spines in 4th whorl	Tail/body
<i>E. palearis</i> (7)	62-69 (65.4)	14-17 (15.3)	28-37 (31.0)	11-13 (11.3)	1.61-1.77 (1.71)
<i>E. quinquecarinatus</i> (34)	65-86 (77.1)	11-14 (13.1)	27-31 (29.2)	11-13 (11.3)	1.40-1.56 (1.47)
<i>E. clarki</i> (38)	76-110 (89.3)	8-12 (10.2)	25-33 (28.7)	9-11 (9.2)	0.89-1.06 (0.97)
<i>E. defensor</i> (16)	74-86 (70.4)	12-19 (15.0)	22-31 (26.8)	7	0.84-0.93 (0.88)

On the basis of the accumulated material from the Yucatan Peninsula, together with a familiarity with the species occurring in other parts of Middle America, I consider *Ctenosaura erythromelas* Boulenger, 1886, to be a synonym of *Cachryx* (= *Enyaliosaurus*) *defensor* Cope, 1866.

Enyaliosaurus defensor seems to be the most advanced member of the genus. The tail is short and bears few large spines. In this respect the species is most closely approached by *Enyaliosaurus clarki* (Bailey), which has a slightly longer tail and 9 to 11 spines in each caudal whorl; the coloration of *E. clarki* consists of large tan or cream-colored blotches on an olive-brown to black dorsum (Duellman and Duellman, 1959). The other species in the genus (*E. palearis* and *E. quinquecarinatus*) are green or grayish green with black markings. The distinguishing characteristics of scutellation and proportions of the species in the genus are given in Table 2.

The largest specimen of *E. defensor* is a male from Dzibalchén having a snout-vent length of 138 mm. and an incomplete tail. Maximum sizes of males of the other species are all in excess of that measurement—*clarki*, 154; *quinquecarinatus*, 160; *palearis*, 182 mm. *Enyaliosaurus* doubtless is a derivative of *Ctenosaura*, all species of which are larger and have relatively longer tails with less well-developed spines than *Enyaliosaurus*. The evolutionary trend in *Enyaliosaurus* seems to have been towards smaller size with a relatively more robust tail having whorls of large spines. In this respect, *E. palearis* seemingly is primitive; *E. quinquecarinatus* is more advanced and probably is ancestral to the specialized species, *E. clarki* and *E. defensor*.

Iguana iguana rhinolopha Wiegmann

Campeche: Isla del Carmen, 3. Quintana Roo: Isla Cozumel, 1.

All specimens are juveniles; that from Isla Cozumel was sleeping on a bush on the night of August 7, 1962; those from Isla del Carmen were in a grassy

area in a coconut grove on June 9, 1963. Smith (1938:15) also recorded the species from Isla del Carmen; to my knowledge the species is unknown from the mainland of the peninsula, although I suspect that it occurs at least in southern Quintana Roo along the Río Hondo.

***Laemantus deborrei* Boulenger**

Quintana Roo: Caobas, 1.

One adult male having a snout-vent length of 117 mm. and a tail length of 471 mm. is typical of the species and represents the first record from the peninsula.

***Laemantus serratus* Cope**

Campeche: Champotón, 4; Dzibalchén, 1. *Yucatán*: Kikil, 5; Pisté, 1.

Previous workers have recognized two species of *Laemantus* in the Yucatan Peninsula—*L. serratus* Cope, 1864, and *L. alticoronatus* Cope, 1865. Boulenger (1885:105) distinguished the two species as follows: *L. serratus*—57-61 scales around midbody, a white streak from eye to the forelimb and from axilla to groin, a white spot on each side of the base of the tail; *L. alticoronatus*—45-51 scales around midbody, no white streak along flanks, but a white spot in front and another behind thigh. Barbour and Cole (1906:149) referred a specimen from Chichén-Itzá to *L. alticoronatus*; the specimen has 55 scales around the body, no white streaks on neck or flanks, and no white spots on the base of the tail or in front of the thighs. The authors stated: "This specimen seems ideally intermediate between the two species [*alticoronatus* and *serratus*], but with only one specimen definite conclusions are unreasonable." Gaige (1936:296) referred three specimens from Chichén-Itzá and three from Champotón to *L. serratus*; she gave the number of scales around midbody as 49, 53, and 58 for the specimens from Chichén-Itzá, 52, 57, and 61 for those from Champotón and stated: "The range of scale counts bridges the gap between those listed by Boulenger for *serratus* (57-61) and *alticoronatus* (45-51), and it seems possible that a larger series might prove that the two species are identical." Maslin (1963:9) reported on two specimens from Chichén-Itzá and one from Pisté but did not give scale counts or critical comments on coloration that serve to distinguish the two described species.

The eleven specimens that we obtained in the peninsula substantiate the suspicions expressed by Gaige and Barbour and Cole. In the 19 specimens recorded in the literature or collected by us the average number of scales around the body is 53.8; the variation is as follows (number of specimens in parentheses): 48 (1), 49 (1), 51 (3), 52 (4), 53 (1), 54 (1), 55 (1), 56 (2), 57 (2), 58 (1), 59 (1), 61 (1). If the specimens are arranged geographically from north to south, the following results are obtained (number of specimens in parentheses after locality and average number of scales in parentheses after observed range): Kikil (5), 48-56 (51.8); Chichén-Itzá and Pisté (6), 49-58 (53.3); Dzibalchén (1), 57; Champotón (7), 51-61 (55.4).

In coloration, several specimens lack the white spots at the base of the tail; these include two of five specimens from Kikil, one of five from Chichén-Itzá, and the one from Pisté. The white stripe on the head is lacking in one specimen from Chichén-Itzá and in the specimen from Pisté. In most specimens having a white spot in the groin, the spot is confluent with the lateral stripe. One individual from Chichén-Itzá, two from Kikil, and the specimen from Pisté lack spots in the groin.

On the basis of the above analysis of variation in scutellation and coloration and the lack of other features by which to distinguish two species of *Laemactus* in the peninsula, I consider *Laemactus alticoronatus* Cope, 1865, to be a synonym of *Laemactus serratus* Cope, 1864.

All specimens were found in bushes and trees, where by night they were most conspicuous. In life the iris is yellow. The largest specimen is a female having a snout-vent length of 123 mm. and a tail length of 441 mm. Of four juveniles obtained at Kikil, the smallest has a snout-vent length of 55 mm. and a tail length of 204 mm.

Aside from the specimens listed above, the only other record for the peninsula is from Oxpemul, Campeche (Smith, 1938:15).

Sceloporus chrysostictus Cope

Campeche: Champotón, 16; Chuina, 13; Concepción, 1; Dzibalchén, 13; Isla Aguada, 9; Isla del Carmen, 8; Laguna Chumpich, 1; Laguna Silvituc, 5. *Quintana Roo*: Felipe Carrillo Puerto, 2; Isla Mujeres, 25; Pueblo Nuevo X-Can, 26; Puerto Juárez, 17; Xcalak, 1. *Yucatán*: Cenote Seco, 2; Kikil, 17; Pisté, 75; Sisal, 9.

This terrestrial lizard occurs throughout the peninsula, but seems to attain its greatest abundance in the scrub forest. Perhaps the fact that the lizards are more readily observed in the scrub forest than in the quasi-rainforest accounts for this impression, but careful observations in both habitats suggest that the species is not abundant in the mesic forest. The absence of the species on Isla Cozumel is unexpected.

Most individuals were basking in patches of sunlight on the forest floor or in open rocky areas. On the southern end of Isla Mujeres the species was in an open grassy area, where the lizards sought refuge in large clumps of *Opuntia*. On the coastal strand at Sisal the lizards were in an *Opuntia-Uniola* association.

TABLE 3.—VARIATION IN SIX SAMPLES OF *SCELOPORUS CHRYSOSTICTUS*
(DATA FOR MALES ONLY; MEANS GIVEN IN PARENTHESES AFTER OBSERVED RANGES)

Locality	N	Dorsal scales	Femoral pores
Isla Mujeres.....	18	47-52 (48.9)	14-17 (15.2)
Puerto Juárez.....	13	43-50 (45.5)	13-16 (13.8)
Pisté.....	20	42-49 (44.8)	13-16 (14.3)
Dzibalchén.....	12	43-49 (45.6)	12-15 (13.5)
Chuina.....	13	43-50 (46.5)	12-15 (12.9)
Isla Aguada.....	9	44-52 (46.5)	13-16 (14.8)

Specimens from each of six localities were studied with regard to variation in scutellation. Of the characters studied, only the numbers of femoral pores and dorsal scales varied noticeably (Table 3). Most specimens have five enlarged supraoculars; three specimens from Isla Mujeres have six, and two specimens from Pisté and three from Chuina have four supraoculars. The

largest specimen is a male from Isla Mujeres and has a snout-vent length of 62 mm. and an incomplete tail 88 mm. in length. The largest female is from Puerto Juárez and has a snout-vent length of 54 mm. and a tail length of 96 mm. The smallest juvenile is from Puerto Juárez and has a snout-vent length of 20.5 mm. and a tail length of 33 mm. Maslin (1963:14) presented an excellent description of the colors in life and pointed out the marked sexual dimorphism in color and pattern.

Aside from the localities listed by Smith (1939b:299), Maslin (1963:14) reported the species from 9 kilometers north of Mérida and from Pisté, Yucatán.

Sceloporus cozumelae Jones

Quintana Roo: Isla Cozumel, 11; Isla Mujeres, 9; Puerto Juárez, 14.
Yucatán: Sisal, 26.

This small terrestrial lizard is most frequently found on the white sand beaches where there are outcroppings of rock amidst sparse vegetation, but on the south end of Isla Mujeres the lizards were found in an open grassy area on rocky soil. Maslin (1963:13) described the colors in life, and Smith (1939b:249) discussed the variation in scutellation between individuals from the northern coast of Yucatán and those from Isla Cozumel. He showed that minor differences exist in the head scales and in the numbers of femoral pores (average of 7.3 on Isla Cozumel and 8.8 in Yucatán) and dorsal scales (average of 61.4 on Isla Cozumel and 58.9 in Yucatán). An analysis of the numbers of femoral pores and dorsal scales in specimens from four localities

TABLE 4.—VARIATION IN FOUR SAMPLES OF *SCELOPORUS COZUMELAE*
(DATA FOR MALES ONLY; MEANS GIVEN IN PARENTHESES AFTER OBSERVED RANGES)

Locality	N	Dorsal scales	Femoral pores
Sisal.....	19	48-53 (49.8)	8-10 (8.9)
Puerto Juárez.....	11	48-56 (51.6)	7-8 (7.7)
Isla Mujeres.....	9	52-56 (53.5)	7-9 (7.7)
Isla Cozumel.....	11	47-53 (49.3)	8-10 (8.8)

reveals that the variation does not seem to be correlated with geography (Table 4). In these characters the specimens from the most distant localities are more nearly alike than are the others.

The largest male has a snout-vent length of 59 mm. and the largest female, 48 mm. The smallest juvenile has a snout-vent length of 23 mm. and a tail length of 32 mm.

Sceloporus lundelli gaigeae Smith

Campeche: Chuina, 1; Dzibalchén, 7; Treinta y seis, 1. *Quintana Roo*: Pueblo Nuevo X-Can, 1. *Yucatán*: Pisté, 8.

All specimens have some form of a broad white stripe on the posterior surface of the thigh; faint, narrow, transverse dark bands are present on the dor-

sum in some individuals. The specimen from Treinta y seis apparently is the southernmost record for this subspecies, for Smith (1939b:71) referred specimens from Balchacaj, Campeche, to *S. lundelli lundelli*.

All specimens were found on tree trunks; some individuals were observed to ascend the trunks to limbs at least 20 meters above the ground.

Eumeces schwartzei Fischer

Campeche: Dzibalchén, 2. *Quintana Roo*: Pueblo Nuevo X-Can, 2. *Yucatán*: Pisté, 6.

All specimens of this widespread skink were found on the forest floor. Several individuals were observed to take refuge in holes or cracks in the limestone.

Mabuya brachypoda Taylor

Campeche: Champotón, 1; Isla Aguada, 1. *Quintana Roo*: Isla Cozumel, 3; Isla Mujeres, 1. *Yucatán*: Kikil, 1; Pisté, 3.

All specimens were found in open and relatively dry situations.

Scincella cherriei ixbaac Stuart

Quintana Roo: Pueblo Nuevo X-Can, 1.

A female having 60 dorsal scales arranged in 25 rows at midbody, a snout-vent length of 43 mm., and an incomplete tail 32 mm. in length was found in the leaf litter on the forest floor.

Ameiva undulata gaigeae Smith and Laufé

Campeche: Champotón, 6; Chuina, 2; Dzibalchén, 10; Escárcega, 5; Isla Aguada, 3; Laguna Chumpich, 3. *Quintana Roo*: Caobas, 2; Felipe Carrillo Puerto, 4; Isla Mujeres, 4; Limones, 1; Pueblo Nuevo X-Can, 4; Xcalak, 2. *Yucatán*: Cenote Seco, 3; Kikil, 5; Mérida, 1; Pisté, 42; Sisal, 1.

All adults have 12 or more pale blue vertical bars on the otherwise dark brown flanks and two rows of enlarged preanal scales. The specimens from Laguna Chumpich are juveniles that lack the adult color pattern used to distinguish *A. undulata gaigeae* and *A. undulata hartwegi*; the one adult from Xcalak has 13 vertical bars and is assignable to *A. undulata gaigeae*. Apparently the range of this subspecies includes all of the peninsula, except for the extreme southwestern part of the mainland just east of Laguna de Términos, where Smith and Laufé (1946:39) reported intergrades between *A. undulata gaigeae* and *A. u. hartwegi*.

Maslin (1963:16) described the coloration of specimens from Pisté, Yucatán, and commented on the two distinctive colors of throats in adult males—orange-red in some and bright lemon yellow in others. Of the males that we obtained at Pisté, approximately one half of the specimens have orange throats and the others yellow. Specimens from Escárcega, Champotón and Pueblo Nuevo X-Can have orange throats. Some males from Felipe Carrillo Puerto have orange throats, others have yellow. On the basis of this sample dichromatic throat color seems to occur in a broad area in the peninsula. Examination of other aspects of coloration and of scutellation revealed no differences between the specimens differing in the color of the throat.

All specimens were found in shaded areas. Since the species occurs on Isla

Mujeres, where dense forest is restricted to a small area in the middle of the island, the absence of *Ameiva* in the dense forest on Isla Cozumel was unexpected.

***Cnemidophorus angusticeps angusticeps* Cope**

Campeche: Champotón, 13; Dzibalchén, 5. *Quintana Roo*: Felipe Carrillo Puerto, 10; Pueblo Nuevo X-Can, 15. *Yucatán*: Kikil, 14; Pisté, 56; Sisal, 24.

This lizard is abundant in scrub forest and savanna and avoids the mesic broad-leaved forest. Only along the Gulf coast at Sisal was the species found on the sandy coastal strand, a habitat occupied by *Cnemidophorus cozumelus* at Xcalak, Puerto Juárez, and on the off-shore islands. The specimens obtained on the coastal strand are pale and have a noticeably different pattern than specimens from inland areas. These specimens are being included in a study of the distribution and variation in the species by Clarence J. McCoy, Jr. and Kathleen Beargie at the University of Colorado Museum.

***Cnemidophorus cozumelus cozumelus* Gadow**

Campeche: Isla del Carmen, 7. *Quintana Roo*: Isla Cozumel, 29; Xcalak, 4.

The specimens from Xcalak on the Caribbean coast of extreme southeastern Quintana Roo help to fill the distributional gap between the localities on Isla Cozumel and Ramate, El Petén, Guatemala, as shown by McCoy and Maslin (1962:621). The seven specimens from Isla del Carmen substantiate the sympatric occurrence on the island with *C. deppei deppei*, as first reported by McCoy and Maslin (1962:622). All of our specimens were obtained on sandy coastal strand sparsely covered with grass and shaded by coconut palms.

McCoy and Maslin (1962:622) stated that the number of granules around midbody in 76 specimens from Isla de Cozumel varied from 100 to 119 (average 107.0) and that 89.5 per cent of 238 specimens had two, three, or four accessory frontoparietals. These authors had three specimens from Isla del Carmen, and those specimens had 97, 98, and 103 granules around midbody and 3, 5, and 6 accessory frontoparietals. From the combined data given by McCoy and Maslin and those obtained from our specimens from Isla del Carmen, the variation in number of granules around midbody in ten specimens is 87 to 103 (average 95.1). Of the seven specimens that we obtained on the island, six have three accessory frontoparietals, and one specimen has only one accessory scute. Two specimens have the frontoparietals partially fragmented anteriorly. The four specimens from Xcalak have 94 to 98 (average 96.2) granules around midbody. Two of these specimens have three accessory frontoparietals; one has one, and one lacks accessory scutes.

The number of granules around midbody is much lower in samples from the southern part of the peninsula (Isla del Carmen and Xcalak) than in specimens from the north (Isla Cozumel), but four specimens from Ramate, El Petén, Guatemala, have 101 to 108 (average 105.0) granules (Duellman and Wellman, 1960:37).

***Cnemidophorus cozumelus rodeki* McCoy and Maslin**

Quintana Roo: Isla Mujeres, 7; Puerto Juárez, 2.

These pallid specimens agree with the description of the subspecies given by McCoy and Maslin (1962:624); all were found on coastal strand.

SERPENTES

Boa constrictor imperator Daudin

Campeche: Champotón, 1; Chuina, 1; Dzibalchén, 1; Escárcega, 3. *Quintana Roo*: Pueblo Nuevo X-Can, 1; Puerto Juárez, 1. *Yucatán*: Pisté, 3; Sisal, 1.

Boas were found throughout the peninsula, except in southeastern Campeche and southern Quintana Roo, where the species probably occurs. Most specimens were found on roads at night, but one was found beneath a bush on the coastal strand at Sisal at mid-day.

Typhlops microstomus Cope

Yucatán: Pisté, 2.

One female (70816) has a total length of 337 mm.; in life the snake was uniform pinkish tan above and below, and the eye was not visible. The other specimen, a juvenile having a length of 192 mm., was the same color, but the eye was barely visible.

Coniophanes imperialis clavatus (Peters)

Campeche: Champotón, 1; Escárcega, 2; Laguna Alvarado, 1; Laguna Chumpich, 1.

The belly was dull red in life; the middorsal stripe is noticeable in the specimen from Champotón; in the others the stripe is barely evident. Four individuals were found on the ground at night; one individual was trying to engulf a mangled, dead *Phrynohyas spilomma*. One individual was found in forest litter at Laguna Alvarado on March 1, 1963.

Coniophanes meridianus Schmidt and Andrews

Campeche: Dzibalchén, 1.

The single specimen from dense scrub forest at Dzibalchén agrees with the descriptions of the species given by Schmidt and Andrews (1936:179) and Andrews (1937:359). The chin, throat, and labials are cream-color with black flecks; the head and nape are dark brown. A cream colored stripe extends from the top of the eye onto the second upper temporal. A series of dark brown dashes form an interrupted stripe on the upper 3rd and lower 4th rows of dorsal scales. A row of dashes exists middorsally on the anterior three-fourths of the body, which is pale tan and darkest middorsally. The specimen is a male having a body length of 198 mm., a tail length of 105 mm., and the

following scale formula: $17 \frac{7+8 \text{ (73)}}{7+8 \text{ (74)}} 15 \text{ (123)} + 90 \text{ caudals.}$

Coniophanes schmidtii Bailey

Yucatán: Pisté, 3.

Two specimens (70830-1) have the typical color pattern of the temporal stripe continuous with the dorsolateral stripe, whereas the other specimen (70829) is pallid dorsally. Its temporal stripes terminate on the nape, and the dorsolateral stripes begin at the level of the 25th ventral. This specimen is a female having 170 ventrals and 95 caudals. The other specimens are males having 161 and 167 ventrals and 104 and 103 caudals.

Conophis lineatus concolor Cope

Campeche: Chuina, 1. *Yucatán*: Kikil, 2; Pisté, 5; Uxmal, 1.

All of the specimens from Yucatán agree with the definition of the subspecies *C. l. concolor* as given by Wellman (1963:270). Aside from the localities mentioned above, one individual was observed on the coastal strand at Sisal, Yucatán, and another was seen in scrub forest on Isla Mujeres, Quintana Roo.

The specimen from the savanna at Chuina, Campeche, is an intergrade between *C. l. lineatus* to the south and west and *C. l. concolor* to the north. The specimen is a male having 163 ventrals and 68 caudals. The tips of the scales in the seventh dorsal scale rows are black throughout the length of the body and onto the base of the tail. The tips of most of the scales in the fourth dorsal rows on the anterior two-thirds of the body also are black. These interrupted stripes correspond to the lateral and dorsolateral stripes that are continuous in *C. l. lineatus* (Wellman, 1963:268), which also has continuous stripes on the first scale rows.

Dipsas brevifacies (Cope)

Quintana Roo: Puerto Juárez, 1. *Yucatán*: Pisté, 2.

The range of variation in scutellation exhibited by these specimens is within that given by Peters (1960:40). In life the body is black above and below with broad orange rings that are palest ventrally. This coloration is in contrast with that described for a specimen from Chichén-Itzá by Schmidt and Andrews (1936:175), who stated: "In life the light body-bands were bitter-sweet pink alternating with black, with a flame scarlet neck-band."

All specimens were found on roads at night.

Dryadophis melanolomus melanolomus (Cope)

Campeche: Dzibalchén, 2. *Quintana Roo*: Felipe Carrillo Puerto, 2; Pueblo Nuevo X-Can, 1. *Yucatán*: Mérida, 1; Pisté, 1.

All specimens have the dorsal scales edged with black. In some individuals the amount of black on the scales in the first, second, fourth, and fifth dorsal rows is so much reduced that the dark upper edges of the scales in the third row give the illusion of a lateral dark stripe. All individuals were found in scrub forest by day.

Drymobius margaritiferus margaritiferus (Schlegel)

Campeche: Champotón, 1. *Quintana Roo*: Dziuché, 1; Felipe Carrillo Puerto, 1.

All individuals of this species were found in forested areas; to my knowledge *Drymobius* avoids the arid tropical scrub forest on the northern end of the peninsula.

Elaphe flavirufa phaescens Dowling

Quintana Roo: Puerto Juárez, 2. *Yucatán*: Chichén-Itzá, 1.

Data from these specimens serve to supplement the description of this subspecies given by Dowling (1952), who based his description on one adult male and four small females. The two specimens from Puerto Juárez (70850-1) are adult females having 30 and 29 body blotches, 260 and 262 ventrals, 60 +

and 96 caudals, 2 and 3 rows of smooth scales at midbody, body lengths of 1435 and 1100 mm.; the latter has a tail/body length ratio of 21.2 per cent. In these specimens the dorsal ground color in life was a dull yellowish gray, and the blotches were dark chocolate brown. The specimen from Chichén-Itzá is a half-grown male having 31 body blotches, 260 ventrals, 99 caudals, 5 rows of smooth scales at midbody, a body length of 657 mm., and a tail/body ratio of 23.3 per cent. In life the dorsal ground color was yellowish tan; the dorsal blotches were reddish brown outlined with dark brown. The iris was pale grayish tan.

All specimens were found active at night.

Elaphe triaspis triaspis (Cope)

Quintana Roo: Felipe Carrillo Puerto, 1. *Yucatán*: Pisté, 5.

Five specimens from Pisté have 49-55 (average 52) dorsal body blotches, and one specimen from Felipe Carrillo Puerto has 52 blotches. These are well within the range of variation given for this subspecies by Dowling (1960: 72). The dorsal ground color in three juveniles from Pisté is orange-tan; the blotches are solid dark brown. Adults have a grayish tan ground color and brown blotches with pale centers.

Ficimia publia Cope

Campeche: Chuina, 1. *Yucatán*: Pisté, 1.

The specimen from Pisté is an adult female having 22 dorsal body blotches that are about equal in length to the middorsal interspaces, 2-2 postoculars, and no internasals. The specimen from Chuina is a small male having 31 dorsal body blotches that are about equal in length to the middorsal interspaces, 1-2 postoculars, and no internasals. The female is orange-tan with brown blotches having pale brown centers, whereas the small male has a yellowish tan ground color with solid dark brown blotches.

Smith (1947:411) named and diagnosed *Ficimia publia taylori* on the basis of two specimens from San Lorenzo, Veracruz. He stated that the Veracruzian subspecies was distinctive in ". . . having a reduced number (about 30) of large blotches about as wide as the interspaces on the back, differing from [*publia*] usually in lacking internasals and having only one postocular on each side." The present specimens do not seem to fit the pattern of geographic variation described by Smith; consequently, until additional material is available to permit a better definition of subspecies, I prefer to use only the binomial.

Imantodes cenchoa leucomelas Cope

Campeche: Chuina, 1.

One specimen of this widespread species was obtained by Clifton from a resident of Chuina.

Imantodes tenuissimus Cope

Yucatán: Pisté, 2.

Both specimens are females having 242 and 246 ventrals, 142 and 146 caudals, 41 and 43 dorsal dark blotches on the body, and 31 and 33 blotches

on the tail. The dark brown dorsal blotches extend laterally onto the edges of the ventrals, and the pale creamy tan interspaces are shorter than the blotches middorsally.

One specimen was brought to us by a local resident; the other was found on a road at night.

***Lampropeltis doliata blanchardi* Stuart**

Quintana Roo: Pueblo Nuevo X-Can, 1. *Yucatán*: Pisté, 1.

A large male from Pisté has a body length of 1094 mm. and a tail length of 188 mm. Both specimens were found at night.

***Leptodeira frenata malleisi* Dunn and Stuart**

Campeche: Escárcega, 1; Isla del Carmen, 1. *Quintana Roo*: Felipe Carrillo Puerto, 2; Isla Cozumel, 1.

The coloration of these specimens agrees with the analysis of geographic variation in the number and color of dorsal body blotches presented by Duellman (1958:60). The number of dorsal body blotches is: Isla del Carmen, 28; Escárcega, 26; Felipe Carrillo Puerto, 24 and 26; Isla Cozumel, 26. One specimen from Felipe Carrillo Puerto (70868) has solid dark brown blotches; the others have blotches that are pale brown in the center.

All specimens were found on roads at night.

***Leptodeira frenata yucatanensis* (Cope)**

Yucatán: Pisté, 1.

The single female has 24 brown blotches on the body; the blotches are edged with black. In life the dorsal ground color was pinkish brown, and the venter was a rosy cream color.

***Leptophis mexicanus mexicanus* Duméril, Bibron, and Duméril**

Campeche: Escárcega, 2.

These two specimens have narrow lateral dark stripes present posteriorly only on the upper part of the second and lower part of the third rows of scales. One specimen is a male having 159 ventrals; the other is a female having 168. Oliver (1948:214) considered three specimens from Balchacaj in southwestern Campeche to be intergrades between *L. mexicanus mexicanus* and *L. m. yucatanensis*; he stated that those specimens have the color pattern of *yucatanensis* (broad lateral dark stripe) and the low number of ventrals characteristic of *mexicanus*. The two specimens from Escárcega have color patterns typical of the subspecies *mexicanus*; furthermore, the numbers of ventrals are within the range of variation in that subspecies as reported by Oliver (1948:201).

***Leptophis mexicanus mexicanus* Oliver**

Campeche: Dzibalchén, 3. *Yucatán*: Kikil, 1; Pisté, 7.

Four males have 162-165 (average 163.2) ventrals, and six females have 163-171 (average 166.6) ventrals. All specimens have a broad lateral dark stripe encompassing all of the third and adjacent parts of the second and fourth rows of scales posteriorly. A juvenile having a body length of 280 mm. and a tail length of 170 mm. is colored like the adults.

Ninia sebae morleyi Schmidt and Andrews

Campeche: Chuina, 1.

This male has 143 ventrals and 50 caudals; in these characters it is typical of *Ninia sebae morleyi* as defined by Schmidt and Rand (1957:76). Posterior to the black nuchal band, the body is uniform red above, except for the black tips of the scales and the presence of a pair of black spots on the sixth and seventh scale rows at the level of the ninth ventral. The snake was found beneath a pile of palm fronds.

Oxybelis aeneus auratus (Bell)

Yucatán: Pisté, 1.

According to Bogert and Oliver (1945:388), in *Oxybelis aeneus aeneus* the diameter of the eye is more than the length of the internasal, whereas in *O. aeneus auratus* the diameter of the eye is less than the internasal. The present specimen, a male, has an internasal:eye ratio of 1:1.2 and thus is assignable to the subspecies *O. a. auratus*.

Oxybelis fulgidus (Daudin)

Campeche: Crucero, 1; Dzibalchén, 1. *Yucatán*: Kikil, 1.

All specimens were found in scrub forest; the individual from Crucero was on a road during a hard rain in mid-afternoon.

Pliocercus andrewsi andrewsi Smith

Yucatán: Pisté, 1.

This female, brought to us by a local resident, has 126 ventrals and an incomplete tail, 5 black rings plus a black nuchal band, and 5 red rings on the body. The rings are narrowly separated by yellow. The black rings are 10 to 13 scales in length dorsally and 7 to 9 scales ventrally. The scales in the red rings have black tips; the temporal band, labials, and chin are creamy yellow.

Scaphiodontophis zeteki nothus Taylor and Smith

Yucatán: Pisté, 1.

This male provides the first record for the genus from the Yucatan Peninsula. The anterior two-thirds of the body has black, white, and red bands. The snout is black. The posterior one-third of the body is dull brown with a row of black spots on the vertebral row and fifth rows of scales. The belly is pale creamy yellow.

Sibon sanniola (Cope)

Campeche: Champotón, 1; Dzibalchén, 1. *Quintana Roo*: Felipe Carrillo Puerto, 1. *Yucatán*: Chichén-Itzá, 1; Dzitás, 1.

All specimens are typical of the species as defined by Peters (1960:187). In life the dorsum was rich pale brown with dark brown dorsal blotches narrowly outlined by creamy yellow. The specimen from Champotón extends the known range of the species into southwestern Campeche.

Spilotes pullatus mexicanus (Laurenti)

Campeche: Dzibalchén, 1; 78 km. E of Escárcega, 1. *Quintana Roo*: Puerto Juárez, 1. *Yucatán*: Pisté, 1.

Individuals of this species were found in scrub forest and in quasi-rain-forest. The specimen from 78 kilometers east of Escárcega was found in a tree.

Stenorrhina freminvillei Duméril, Bibron and Duméril

Yucatán: Pisté, 1.

This female has a body length of 508 mm. and a tail length of 81 mm. The belly is uniform creamy yellow; the dorsum is grayish brown, and the base of each scale is black. I follow Stuart (1963:117) in not recognizing the poorly distinguished subspecies.

Tantilla canula Cope

Campeche: Champotón, 1.

A female having 106 ventrals and 34 caudals provides the third known locality for this species on the peninsula. Previously the species has been definitely recorded only from Chichén-Itzá and Libre Unión, Yucatán. On each side the specimen has seven upper and six lower labials, one preocular, two postoculars, and two temporals. The general dorsal coloration is brown with a narrow middorsal creamy white line that is most distinct on the tail. The snout is creamy yellow, and the belly is white. The body length is 109 mm., and the tail length is 26 mm.

Tantilla cuniculator Smith

Yucatán: Pisté, 1.

The female has 147 ventrals, a body length of 163 mm., and an incomplete tail. It differs noticeably from the types (Smith, 1939a:32) in having the rostral broadly visible from above; the posterior edge of the rostral extends posteriorly and partly separates, the internasals. The dorsolateral light stripe is barely evident.

Thamnophis proximans rutiloris (Cope)

Quintana Roo: Isla Cozumel, 1.

One individual was obtained in a clump of mangroves, where it took refuge in a small hole in the ground.

Tropidodipsas fasciata fasciata Günther

Campeche: Hopelchén, 1.

A female was dead on a road at night; it has 183 ventrals, 68 caudals, 20 grayish white bands on the body, and 12 bands on the tail.

Tropidodipsas sartori sartori Cope

Campeche: Xpujil, 1. *Quintana Roo*: Pueblo Nuevo X-Can, 1. *Yucatán*: Peto, 2.

The specimen from Pueblo Nuevo X-Can was found in a cave; the others were found on roads at night.

Micrurus affinis alienus (Werner)

Campeche: Dzibalchén, 1.

The one female has 22 black rings on the body, 217 ventrals, and 38 caudals, of which the ten anteriormost are undivided. The individual, which was found in scrub forest, is typical of the subspecies *M. a. alienus* as defined by Schmidt (1936:212).

Micrurus affinis mayensis Schmidt

Yucatán: Pisté, 1.

This male was on a road at night; it has 14 black rings on the body, 189 ventrals, and 51 caudals, of which the 17 anteriormost are undivided. The specimen agrees with the description of *M. a. mayensis* (Schmidt, 1933:37), except in having a lower number of ventrals; Schmidt gave the range of ventrals in males as 195-203.

Agkistrodon bilineatus bilineatus Günther

Campeche: Champotón, 1. *Yucatán*: Pisté, 2.

These specimens, which were found at night in scrub forest, are being studied by Howard K. Gloyd at the University of Arizona.

Bothrops atrox asper (Garman)

Campeche: Xpujil, 1. *Quintana Roo*: Caobas, 2; Pueblo Nuevo X-Can, 2; Puerto Juárez, 1. *Yucatán*: Kikil, 1.

No large individuals were found, but small examples seemed to be abundant in various parts of the peninsula in both wet and dry seasons.

Bothrops yucatanicus (Smith)

Yucatán: Pisté, 2.

Two small individuals in life had pale yellow tails and a sharply defined creamy yellow middorsal stripe. One specimen contained a *Sceloporus chrysostictus*.

Crotalus durissus tzabcan Klauber

Campeche: Champotón, 3; Dzibalchén, 3; Escárcega, 1. *Quintana Roo*: Caobas, 1. *Yucatán*: Kikil, 1; Pisté, 3; Tizimin, 1.

Rattlesnakes were common in the scrub forest in the peninsula. Several individuals are large, the largest having a total length of 1688 mm. In small individuals the lateral body blotches are solid dark brown or black, and the middorsal diamond-shaped blotches are black with brown centers and narrowly outlined with creamy yellow. In large individuals the dorsal and lateral blotches are reddish brown or chocolate brown; the centers of the middorsal blotches are tan.

SUMMARY

Locality records are given for each of the 96 species and subspecies of amphibians and reptiles collected in the Yucatan Peninsula by field parties from the University of Kansas in 1962 and 1963.

Five species (*Bolitoglossa mexicana mexicana*, *Eleutherodactylus*

alfredi, *Anolis humilis uniformis*, *Laemactus deborrei*, and *Sca-phiodontophis zeteki*) are recorded for the first time from the Yucatan Peninsula. Notable range extensions on the peninsula are recorded for many other species.

Detailed studies of certain species have resulted in the following taxonomic changes:

1.—*Kinosternon cruentatum consors* Stejneger, 1941, is considered to be invalid; consequently, all specimens from the peninsula are referred to *Kinosternon cruentatum* Duméril and Bibron, 1851.

2.—*Anolis ustus* Cope, 1864, is shown to be a subspecies of *Anolis sericeus* Hallowell, 1856.

3.—*Ctenosaura* (= *Enyaliosaurus*) *erythromelas* Boulenger, 1886 is shown to be the same as *Cachryx* (= *Enyaliosaurus*) *defensor* Cope, 1866.

4.—*Laemactus alticoronatus* Cope, 1865, is placed in the synonymy of *Laemactus serratus* Cope, 1864.

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